

Claims

1. A display system for generating a visible pattern on a display surface responsive to an audio frequency input signal, comprising:
 - means for emitting a visible beam of light along a predetermined beam axis;
 - reflecting means interposed along the beam axis for reflecting the light beam to form a reflected beam directed generally toward the display surface;
 - moving means including a pair of coils and a magnetizable means associated with each said coil responsive to audio frequency input signals for movement of the reflecting means to generate a pattern on the display surface; and
 - mounting means for supporting said reflecting means proximate to said pair of coils for movement of the reflecting means relative to said moving means.
2. The display system according to claim 1 wherein said reflecting means is movable in response to a sinusoidal input signal of an audio frequency to produce a pattern generated on the display surface which is substantially circular.
3. The display system according to claim 1, wherein one preferred audio range is above about 200Hz and below about 500Hz.
4. The display system of claim 1 wherein the predetermined beam axis has an angle of variation of the visible beam of light is greater than zero degrees and less than ninety-degrees.
5. The display system of claim 1 wherein the coils are positioned on the same side as the mirror.

- 1 6. The display system of claim 1 wherein the coils are positioned on the
2 reverse-side of the mirror.
- 1 7. The display system according to claim 1 including means acoustically
2 coupling said moving means to the output of an audio frequency source.
- 1 8. The display system according to claim 1 wherein the visible beam of light
2 is a laser beam.
- 1 9. The display system according to claim 1, including connection means
2 associated with said coils for connection to the audio input signal to transmit the audio
3 input signal to said coils
- 1 10. A laser beam projection apparatus comprising:
2 means for generating a laser beam for impingement onto a reflecting
3 surface of a mirror; and
4 means responsive to a magnetic field associated with a pair of coils
5 proximate to said mirror for movement of the mirror to change the direction of beams
6 reflected from the mirror..
- 1 11. The laser beam projection apparatus as claimed in claim 10 including at
2 least one movable mirror movable in response to the magnetic field.
- 1 12. The apparatus as claimed in claim 10 for use in combination with a light
2 source and at least one audio signal for generating a visual display pattern responsive to
3 the audio signal, comprising:

4 said mirror being positioned for receiving a beam from the light source to
5 form a reflected beam;

6 a pair of coils and associated magnetic elements responsive to one of the
7 at least one audio signal of said at least one audio signal; and

8 means for coupling said coils and said mirror for imparting angular
9 movement to the mirror for movement of the mirror in two dimensions normal to an
10 axis, thereby directing the reflected beam to traverse a course defining the visual display
11 pattern responsive to the audio signal.

1 13. The apparatus of claim 12, wherein the coupling means comprises
2 spacing the mirror apart from the coils to permit movement of the mirror through an
3 angular range in said two dimensions relative to the coils and thereby amplify the size of
4 the display pattern and including means connecting one end of the mirror to maintain the
5 mirror in a relationship to the coils for movement of the mirror relative to the coils.

1 14. The apparatus of claim 12 in which the angular range is greater than
2 zero-degrees and less than ninety-degrees.

1 15. The apparatus of claim 12 wherein the mirror and the coils are positioned
2 on a support plate mounted proximate to and spaced from said magnetic elements.

1 16. The apparatus of claim 10 wherein the coils when responsive to an input
2 signal consisting of a regular, periodic waveform has a frequency other than the resonant
3 frequency, the reflected beam traverses a substantially elliptical path.

1 17. The apparatus of claim 10 wherein the pair of coils is connected with
2 opposite edges of the mirror.

1 18. The laser beam projector claimed in claim 16 including at least one coil
2 associated with one end of said mirror for generating a magnetic field and at least
3 another of said pair of coils associated with another end of said mirror to impact
4 movement to said mirror responsive to audio inputs to said coils, such that the laser
5 beam is deflected by movement of said mirror in response to the magnetic field
6 generated by said coils.

1 19. A method of generating a visual display surface responsive to an audio
2 frequency input signal comprising the steps of:

3 directing a light beam along a predetermined beam axis towards a
4 reflecting surface of a mirror;

5 providing a pair of coils and associated magnetic element responsive to
6 the audio frequency input signal for energizing said coils with said audio signals;

7 mounting the mirror and paid of coils relative to each other so that the
8 mirror moves responsive to actuation of the coils with the input signal and causing the
9 mirror to move to reflect the light beam in a different manner in accordance with the
10 movement of the mirror to form a reflected beam directed generally towards the display
11 surface to produce an image on the display surface;

12 coupling the mirror with the coils so that the mirror moves responsive to
13 audio signals input to said coils; and

14 actuating the coils with the input audio signal so that the reflected beam
15 traverses a path to produce an image on the display surface.

1 20. The method according to claim 19 wherein the coils are mounted on the
2 rear non-reflecting surface of the mirror.